

ABSTRACT

A method for forming a substantially oxygen-free silicon carbide layer on a substrate, where the silicon carbide layer has a dielectric constant of less than about four. The substrate is held at a deposition temperature of between about zero centigrade and about one hundred centigrade, and a gas flow of tetramethylsilane is introduced at a rate
5 of no more than about one thousand scientific cubic centimeters per minute. The deposition pressure is held between about one milli Torr and about one hundred Torr, and a radio frequency plasma discharge is produced with a power of no more than about two kilowatts. The plasma discharge is halted when a desired thickness of the silicon carbide layer has been formed.

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